To: Wall, Dan[wall.dan@epa.gov]
Cc: Kastner (Dinneen), Ellie[Ellie.Kastner@WestonSolutions.com]; Robinson, David[David.Robinson@WestonSolutions.com]
From: Myers, Craig
Sent: Sat 8/8/2015 10:42:06 PM
Subject: Re: Benthic Invertebrate Analysis

Ellie,
call me with questions, and to let me know what you need.

Sent from my iPad

On Aug 8, 2015, at 4:30 PM, Wall, Dan <wall.dan@epa.gov> wrote:

> Please see below
>
> Here is the "SOP"
>
> BMI Methodology:
>
> In order to allow direct comparison to the historical Animas River BMI dataset, we replicated a BMI sampling method (to the greatest extent possible) that was developed by Chester Anderson and used previously on the Animas River (Anderson 2007; personal communication). Anderson's method utilizes and modifies protocols developed by the Environmental Protection Agency (Barbour et al. 1999) and Colorado Department of Public Health and Environment (CDPHE 2010).
>
> Anderson (2007) assessed a variety of BMI sampling methods and determined that the most appropriate method for use in the Animas River was a targeted riffle method that utilizes a modified rectangular dip net coupled with a dolphin bucket. The size of the net opening is 46 cm by 25 cm or 0.115 m^2 (178 in^2). We implemented this methodology using the same rectangular dip net used in Anderson's previous Animas River BMI sampling. Each sample was collected by placing the net securely on the bottom of the river with the net opening facing upstream. A biologist stood downstream of the net and disturbed the substrate on the river bottom that was immediately upstream of the net. Substrate was disturbed by lifting and scrubbing rocks and gravel by hand for approximately 90 seconds so that benthic macroinvertebrates would be dislodged and drift downstream into the

net opening. For each sample, an area of approximately 0.115 m^2 of substrate was disturbed, which is identical to the size of the net opening. For each site, five samples were obtained diagonally across riffle habitat within an approximately 100 meter-long section of the river. The five samples were then composited into a single sample container. Thus, 0.575 m^2 (890 in^2) of riffle habitat was sampled at each site (0.115m^2 x 5 samples).

Works Cited:

Anderson, C. 2007. Effects of Mining on Benthic Macroinvertebrate Communities and Monitoring Strategy. *In* S. Church, P. von Guerard, and S. Finger (Eds.), Integrated Investigations of Environmental Effects of Historical Mining in the Animas River Watershed, San Juan County, Colorado. USGS Professional Paper 1651.

Anderson, C. 2013. Personal Communication, 10/8/2013.

Barbour, M., J. Gerritsen, B. Snyder, and J. Stribling. 1999. Rapid Bioassessment

Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic

Macroinvertebrates and Fish, Second Edition. EPA 841-B-99-002. US Environmental Protection Agency; Office of Water; Washington, D.C.

Colorado Department of Public Health and Environment. 2010. Benthic

Macroinvertebrate Sampling Protocols. Water Quality Control Division –

Standard Operation Procedure. WQCDSOP-001.

From: Kastner (Dinneen), Ellie [mailto:Ellie.Kastner@WestonSolutions.com]
Sent: Saturday, August 08, 2015 3:10 PM
To: Wall, Dan; Myers, Craig
Cc: Robinson, David
Subject: Benthic Invertebrate Analysis

Hi Craig and Dan,

I spoke with Stave Auer (TechLaw) regarding the analysis that you would like to have performed. Steve mentioned that lab procurement may not be able to begin until Monday since the lab isn't available at this time on Saturday. After speaking with him, I have several questions for you, below.

The information I had about the samples was (to ensure correctness):

- Ten sediment samples I would recommend that but we need to make sure we aren't redundant with the overall sediment plan and I will need Craigs concurrence.

- Desire benthic invertebrate analysis

My questions for you after speaking with Steve:

- Do you want identification alone or would you like the full multi-metrics index that indicates how polluted the aquatic environment is? Full MMI

- What are your expectations as far as turnaround time? Steve says that a two week TAT may be possible and that would be the fastest end of the spectrum. 2 week, depending on cost

- Are the samples in your custody? No. Some samples have been collected and some are currently being collected. I expect them ready to ship today.

My goals:

- Get lab shipping information for you

- Get analysis cost information for you On a per sample basis please.

Please let me know what else you need or what else I can do to support you. Thank you and have a great day!!

Ellie Kastner
Weston Solutions, Inc.
Associate Project Engineer
303-729-6158